

U.S. Serial No. 10/002,576  
Family No. P2001J062

- 6 -

Appendix

1. A process for producing pearlite from an iron containing article having less than 0.77 wt% carbon comprising the steps of, (a) heating an iron containing article comprising at least 50 wt% iron and in which the amount of carbon contained in the article is less than 0.77 wt% down to 0.0 wt% carbon for a time and at a temperature sufficient to convert at least a portion of said article from a ferritic structure to an austenitic structure, (b) exposing said austenitic structure, for a time sufficient and at a temperature of about 727 to about 900°C, to a carbon supersaturated CO/H<sub>2</sub> environment consisting essentially of CO and 10 to 50 vol.% H<sub>2</sub>, and having a carbon activity greater than about 1, to diffuse carbon into said austenitic structure and (c) cooling said iron containing article to form a continuous pearlite structure.

2. The process of claim 1 wherein said iron containing article further comprises silicon, manganese, and mixtures thereof.

6. The process of claim 1 wherein said time sufficient to diffuse carbon into the austenitic structure ranges from about 1 minute to about 50 hours.

7. The process of claim 6 wherein said pearlite structure is a continuous layer having thickness of at least about 10 microns.

10. The process of claim 7 wherein the layer is from about 10 microns to about 1000 microns.

11. The process of claim 6 wherein the pearlite structure has a thickness equal to the iron article.